

# Bridge Deck Patching

## PURPOSE OF REVIEW

Bridge deck rehabilitation projects are frequently subject to large variations between the amount of deck repair shown on the plans and the actual deck repair work completed. The primary purpose of this review is to evaluate the effectiveness of current policies, practices and procedures that the (STA) Department of Transportation (DOT) implements in estimating and tracking the quantities for bridge deck patching.

Furthermore, effective January 1, 2001 the DOT issued new mixture requirements for portland cement concrete patching. The secondary purpose of the review is to evaluate the usage of these new mixtures and the possible need for additional high early strength mixtures.

## REVIEW TEAM

**FHWA**

**STA**

## SCOPE OF REVIEW

The information contained in the 1998 Bridge Deck Rehabilitation Process Review will be used as a resource for review. Findings and resolution actions from the 1998 review, that apply to deck patching, will be examined to see if the resolution actions have been implemented and, if so, their effectiveness.

This January (STA) is introducing the use of four new concrete mix designs for bridge deck patching. The mix designs are PP-1, PP-2, PP-3 and PP-4. This review will also investigate the use of these mix designs. The review will determine if more guidance is needed for these mix designs.

Because STA is increasing the use of A+B and lane rental contracts, contractors may want to minimize patch cure times before opening lanes to traffic. The need for more rapid curing patches will be evaluated in this review.

Reviews will be conducted at STA District Offices. Interviews with District Office personnel who are responsible for applying the current bridge deck patching criteria will be an important part of the team's activities. These interviews will allow the review team to become familiar with the current procedures and practices used to estimate quantities for bridge deck patching.

A sampling of files for deck patching projects that are currently being developed, or which have been let within the last few years, will be reviewed. Construction records for active or completed projects will be reviewed in order to compare actual deck repair quantities with plan quantities. Also, past completed deck patching projects will be analyzed to see if the actual service life and performance of the patches are living up to, or perhaps surpassing, the total life of the deck.

Active deck patching projects will be visited by the review team, when available, to determine if there are any specific construction issues or methods that might cause some of the variations between the plan quantity and the actual completed quantity of deck repair. The current Bridge Deck Slab Repairs Special Provision will be reviewed in conjunction with this effort.

The procedures and practices followed often vary from agency to agency. This review will investigate practices used by agencies such as other states, toll authorities, and large cities. A short survey will be prepared and sent out to agencies outside STA to determine practices other agencies are using to scope patching projects and if they use any correction factors for the estimated quantities. The survey will also cover curing methods and time allowed for curing before opening to traffic. This review will attempt to interview one agency outside STA.

Districts 1, 4, and 8 have been selected for in-depth reviews, with District 6 serving as the pilot review. As the overall review develops, the team will evaluate the benefit of adding a fourth in-depth District review. The STA District Engineers will be contacted to coordinate the review schedule and be provided a copy of the guidelines in advance of the team's visit. Input will also be sought from the Districts not receiving in-depth reviews, and the review team will be available to visit active and completed projects statewide. The in-depth reviews will be scheduled between April and August 2001. Summary reports will be prepared for each of the individual in-depth reviews. Significant findings from the

individual reviews and the survey are to be completed and presented to STA and the Federal Highway Administration management by the end of October 2001.

A short survey will be sent out to all of the Districts to get preliminary information. The results of this survey may affect the Districts chosen for in-depth review.

**STA/FHWA QUALITY IMPROVEMENT TEAM**

**BRIDGE DECK PATCHING SURVEY**

This Quality Improvement Team is following up on the resolution actions developed from the 1998 Bridge Deck Rehabilitation Process Review, as well as gathering information regarding the recently revised P.C.C. Patching Mixtures.

Please answer the following questions and email back to the sender.

1. Indicate which method the District uses to estimate deck repair quantities. Check all that apply. Also indicate what percentage of the estimates are done with each method.

	10	20	30	40	50	60	70	80	90	100%
<input type="checkbox"/> Deck Survey	<input type="checkbox"/>									
<input type="checkbox"/> NBIS/PONTIS Reports	<input type="checkbox"/>									
<input type="checkbox"/> Delamination Survey	<input type="checkbox"/>									
<input type="checkbox"/> Ground Penetrating Radar	<input type="checkbox"/>									
<input type="checkbox"/> Infrared Thermography	<input type="checkbox"/>									
<input type="checkbox"/> Other _____	<input type="checkbox"/>									

2. How much do the final construction quantities vary from the estimated quantities for each method indicated above?

	0	10	20	30	40	50	60	70	80	90	100%
<input type="checkbox"/> Deck Survey	<input type="checkbox"/>										
<input type="checkbox"/> NBIS/PONTIS Reports	<input type="checkbox"/>										
<input type="checkbox"/> Delamination Survey	<input type="checkbox"/>										
<input type="checkbox"/> Ground Penetrating Radar	<input type="checkbox"/>										
<input type="checkbox"/> Infrared Thermography	<input type="checkbox"/>										
<input type="checkbox"/> Other _____	<input type="checkbox"/>										

3. What coordination is done between the District Bridge Maintenance Unit, District Construction and Bureau of Bridges and Structures to track the final construction quantities for deck repair?

4. How much time is there between the initial deck survey and the deck patching project being let.

Average length of time: \_\_\_\_\_ Months

Maximum length of time: \_\_\_\_\_ Months

What is the maximum amount of time that can pass before a new survey will be done.

5. Which of the new P.C.C. Patching Mixtures has the District been using for deck repair projects?

6. Do you see a need for additional patching mixtures, such as more rapid set mixes?